Rec'd PET/FT@ 24 JUN 2005

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property **Organization**

International Bureau



(43) International Publication Date 19 August 2004 (19.08.2004)

PCT

(10) International Publication Number WO 2004/070419 A1

(51) International Patent Classification7: 17/89

G01S 17/10,

(21) International Application Number:

PCT/GB2004/000324

(22) International Filing Date: 27 January 2004 (27.01.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 0302868.5

7 February 2003 (07.02.2003)

- (71) Applicant (for all designated States except US): IM-PERIAL COLLEGE INNOVATIONS LIMITED [GB/GB]; Sherfield Building, Imperial College, London SW7 2AZ (GB).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): SUHLING, Klaus [DE/GB]; 13 Pember Road, London NW10 5LR (GB).
- (74) Agent: ROBINSON, Nigel, Alexander, Julian; D Young & Co, 21 New Fetter Lane, London EC4A 1DA (GB).

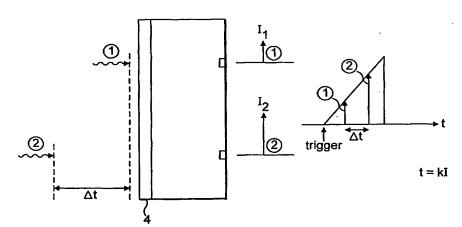
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PHOTON ARRIVAL TIME DETECTION



(57) Abstract: A photon arrival time detector has the form of a photocathode (4) from which a photoelectron is ejected by an incident photon. The photoelectron is accelerated by an applied voltage to a CCD sensor (6). The voltage between the photocathode (4) and the CCD sensor (6) is time varying such that the arrival energy of the electron at the CCD sensor (6) depends upon the time of its arrival at the photocathode (4). Thus, the arrival time of the photon is represented by the intensity of the pixel event recorded by the CCD sensor (6).